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OUT OF THE BOX: iGEM

iGem, or the International Genetically Engineered Machine competition, is the premier international undergraduate research competition in synthetic biology and genetic engineering. As a student organization on Purdue University's campus, iGem provides a unique opportunity to have an "out of the box" research experience.

Every year, each of the 300 worldwide iGem teams are encouraged to add their contributions to a synthetic parts registry. Synthetic parts are segments of an organism's DNA with a particular function. Each synthetic part is called a biobrick because once the DNA segments are characterized, it's almost like building a structure with Lego bricks. For example, students can take part of an *E. coli* genome that senses metal, take another part from a jellyfish genome that makes the cell fluoresce, and put them together so that *E. coli* fluoresces when it senses metal.

Not only does iGem allow undergraduate students to get hands-on research experience, but it also allows them to research on their own terms. The students decide what big challenge to tackle and then come up with a way to solve that problem using synthetic biology.

One mission of iGem is to demonstrate to the community what synthetic biology really is. iGem hopes to dispel some of the negative undertones of words such as genetically modified organisms (GMOs) and the surrounding science behind it. Their goal is to show that synthetic biologists are thinking about the community and the impacts of their work to humanity.

So far the Purdue iGem team has launched a community lab called BioMaker Bench and also worked with Girl Scouts of America to pioneer a biotechnology badge in central Indiana with hopes that it will be adopted nationally.

Ultimately, iGem provides students a real sense of what it means to do research in a group. The interactions students have through iGem broaden their perspective on academia and give attention to how science connects with society.

JPUR student editorial board member Daniel Lee, a junior in mathematics, met with iGem executive board members Peter Mercado-Reyes, James Nolan, Amanda Shanely, and Chris Thompson to learn more about iGem's "out of the box" research opportunities.

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